

## REVIEW ARTICLE



# Effect of ageing on oral health-related quality of life

Abhishek Mehta

Department of Public Health Dentistry, Faculty of Dentistry, Jamia Millia Islamia, New Delhi, India

## Correspondence

Dr. Abhishek Mehta, Department of Public Health Dentistry, Faculty of Dentistry, Jamia Millia Islamia, New Delhi, India.  
E-mail: amehta@jmi.ac.in

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## Abstract

Elderly population is rising all around the world. By 2050, the number of elderly is expected to rise to two billion, 80% of whom will be living in developing countries. It's a challenge for countries, especially developing ones, as it put additional burden on their already overburdened health care infrastructure. This phenomenon is accompanied by the rise in the incidence of chronic diseases such as diabetes, cardiovascular disease, and oral health problems like dental caries, periodontal disease and oral cancer. There is no doubt that oral health and general health are related, this interrelationship becomes more pronounced with increasing age. Oral diseases compromise chewing and eating abilities, thereby affecting the nutritional status in the elderly. Similarly, systemic diseases and/or the adverse side effects of their treatments can lead to increased risk of oral diseases, xerostomia, and altered taste sensation. Traditionally oral health program is planned on the basis of clinical assessment of oral diseases in a population by recording various dental indices. However, the simple assessment of the mouth does not answer a question that has been a more recent concern of health research: What is the effect of poor oral conditions on quality of life (QoL)? There is an increased recognition of incorporating oral health-related QoL measures while evaluating oral health. It can be used to measure the impact of various oral diseases on the general population and high-risk groups and to study the success of various preventive and curative procedures on improving the QoL of an individual.

**Keywords:** Ageing, edentulism, oral health-related quality of life, quality of life

## Introduction

The world, both developing and developed, is ageing at a faster rate i.e. elderly population (60 years plus) is increasing in a higher proportion to the total population. The rise in the dependent population leads to demographic and epidemiological transition with increase in chronic diseases prevalence and decrease in infectious diseases. This phenomenon also brings change in health care delivery systems of the countries putting addition burden on public health care resources. Awareness regarding good oral health has been lacking in previous generations leading to the high prevalence of dental caries and periodontal diseases in this group of the population. Chronic oral diseases ultimately lead to early tooth loss in an individual.<sup>[1]</sup>

Edentulism either partial or complete can affect not only oral health but general health of a person. It influences functional and social life and perception of well-being. Impact of edentulism on oral health can be studied as a modifier of normal physiology, impaired mastication and overall determinant of oral health and general health:

### 1. Modifier of normal physiology

As bone loss is an ongoing process, loss of multiple teeth can lead to early residual ridge resorption. It affects the height

of alveolar bone, reduced denture bearing area, reduction in facial height and changes in soft tissue profile of a person causing protrusion of mandibular lip and chin.<sup>[2,3]</sup>

### 2. Impaired mastication

Number of teeth in the oral cavity is an important indicator of masticatory efficiency. Bite strength of the denture wearer is one-fifth to one-fourth as compared to a dentate individual. Furthermore, a number of chewing strokes required to cut food into half is also more in a denture wearer.

### 3. Denture associated lesions

Due to a decrease elasticity of the oral mucosa and reduced function of salivary glands, certain conditions are more likely to occur in a complete denture patient. Wearing of complete denture has been found to be associated with denture stomatitis, inflammation of the palatal mucosa, angular cheilitis and traumatic ulcers.<sup>[2]</sup> Long-term edentulism may lead to a condition known as oral dyskinesia, which is defined as abnormal, involuntary, patterned or stereotyped and purposeless orofacial movements.<sup>[4]</sup>

### 4. Effect on general health

Researchers have associated wearing of complete denture with increased chances of obesity, cancers and ulcers of

the gastrointestinal tract, cardiovascular problems, chronic kidney disease and sleep disorders.

Hence, it can be fairly concluded that tooth loss can affect not only functional aspect of oral health but general health of a person. Edentulism negatively affects social life and day-to-day activities, self-esteem and psychosocial well-being of a person. All these lead to a poorer oral health-related quality of life (OHRQoL) for the denture wearer.<sup>[2]</sup> A meta-analysis on the relationship of tooth loss and OHRQoL has shown that there is a fairly strong evidence has been found between tooth loss and poor OHRQoL. This association seems to be independent from the OHRQoL instrument used and the context of the included samples.<sup>[5]</sup>

### OHRQoL

There are two population health assessment models available - the medical model and socioenvironmental (SE) model. The medical model states that treatment of the oral cavity should be done as if it is an autonomous anatomical structure, which happens to be located within the body, but is not connected to it or the person in any meaningful way. That is, the mouth as an object of enquiry has usually been isolated from both the body and the person. Due to the development of patient-based measures in medicine (as well as dentistry) there is a shift from medical to SE model. In the SE model, health is defined not in terms of the absence of disease, but in terms of optimal functioning and social and psychological well-being.<sup>[6]</sup>

Oral health is now considered to be an integral part of a person's health, and subjective assessment of psychological and social consequences of the problems related to oral health are considered equally important. The indicators used to assess these subjective perspectives were originally called "socio-dental" or "oral health status" indicators. These terms have been replaced by the OHRQoL, which emphasizes the impact of oral diseases and disorders on an individual's functioning and psychosocial well-being.<sup>[7]</sup> This is explained by using the personal assessment of how the following factors affect his/her well-being:

1. Functional factors
2. Psychological factors (concerning the person's appearance and self-esteem)
3. Social factors (such as interaction with others)
4. Experience of pain or discomfort.

OHRQoL can be assessed when these parameters centered around orofacial concerns.<sup>[8]</sup> OHRQoL basically refers to the extent to which the oral diseases impact on individuals' normal functioning and is regarded as an integral part of general health and well-being. It has been recognized by the WHO as an important part of their Global Oral Health Program.<sup>[9]</sup>

The OHRQoL has been studied in recent years using self-report instruments. Two rating systems are widely used to assess the impact of oral conditions on QoL of elderly, one is General (formerly Geriatric) Oral Health Assessment Index (GOHAI)<sup>[10]</sup> and the other one is Oral Health Impact Profile-14 (OHIP-14).<sup>[11]</sup>

### GOHAI

GOHAI was developed for assessment of OHRQoL measures exclusively in elderly with three-month reference period. Later on it was adopted for the general population also and renamed as General Oral Health Assessment Index. It measures OHRQoL of a person or patient on basis of three dimensions of QoL; first one is impact on physical function such as speech, mastication, second is psychological dimension, which includes concerns or dissatisfaction regarding appearance of teeth, social handicap and lack of self-confidences due to oral problems, etc; third dimension emphasize on function aspect, which includes pain/discomfort caused due to oral conditions. GOHAI has been found more suitable for assessing OHRQoL where functional aspect of oral health is of greater concern.<sup>[12]</sup>

### OHIP-14

OHIP-14 was developed as a shorter version of original OHIP-49 questionnaire as an attempt to assess OHRQoL of a person within a reference period of one year. OHRQoL is measures on the basis of seven dimensions of QoL, they are - functional limitation, physical pain, psychological discomfort, physical, psychological and social disability and handicap. OHIP-14 gives greater weight age to psychological and behavioral outcomes hence more suitable in assessing OHRQoL where psychological aspect of oral health has to be measured.<sup>[12]</sup>

### Comparison studies

Various studies around the world have shown that GOHAI was more successful in detecting elderly people's oral health problems when compared to OHIP-14.<sup>[9,12-15]</sup> Immediate outcomes from poor oral health such as pain, discomfort and functional limitations are given more importance by GOHAI scale when compared to OHIP-14, which dwell on assessing psychological and behavioral outcomes. Overall, the GOHAI was more successful than the OHIP-14 at detecting the impacts of oral disorders in the study population, with fewer participants having zero scores. The GOHAI also appeared to be somewhat better at detecting impacts in each of the four health domains represented by the measures.<sup>[12]</sup> GOHAI has better-discriminating power when compared to OHIP-14.<sup>[9,15]</sup>

### Discussion and Conclusion

It is a known fact now that the elderly population is increasing in prominence worldwide, and therefore preparing dental health care services, both public and private is important. Planning for health services accessibility for this new demographic group should be seriously assessed, especially in developing countries.<sup>[1]</sup> Chronic diseases such as dental caries and periodontal diseases are still highly prevalent in older adults, and the risk of tooth loss in old age is high. Only intervention based dental care provision is not sufficient and is costly in a long-term. Demand for treatment

is not well correlated with objectively determined treatment need, and it has been recognized that objective measures of disease are not good predictors of demand.<sup>[5]</sup>

To meet the increasing demand and scarcity of public resources for oral health, new paradigms for oral health assessment are being developed. Over the last two decades, OHRQoL measures are being utilized for subjective assessment of oral health needs.

Both subjective, as well as objective assessment of oral health of a population or individual, will help in improving our understanding regarding consequences of oral diseases. Public health service providers are constantly being asked to include subjective assessment of health i.e. QoL of a population before prioritizing funds for treatment of various diseases including oral problems. This approach helps in better utilization of funds available for treatment of patients in a public domain.<sup>[5,16]</sup>

An OHRQoL approach benefits (1) clinical practitioners in selecting treatments and monitoring patient outcomes; (2) Re-searchers in identifying determinants of health, tracking levels of health risk factors, and determining use of services in populations; and (3) Policy-makers establishing program and institutional priorities, policies, and funding decisions.<sup>[17]</sup>

Limitations in using OHRQoL approach are that the measures developed to record OHRQoL of a person are generic, intended to detect the outcomes of oral and oro-facial disorders, in general. While such measures are useful in that they allow comparisons across diseases and conditions, they may suffer diminished sensitivity, specificity and utility when used with a particular disease.<sup>[18]</sup>

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